



SAR to Support Students with ADHD

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Introduction

- 1. In Professor. Maja Matarić's lab is conducting research on Socially Assistive Robot's (SAR). The USC Interaction lab is building a robot named Blossom. Blossom's goal is to help college students with Attention-Deficit/Hyperactivity Disorder (ADHD) to remain on task while completing their school assignments. College students with ADHD have a difficult time focusing on one task. So when you remove the parents as their support system for the student. The students probability is that they will not complete either all of the school assignment or just complete partial of their assignment. The reason is they will not have the support in place.
- 2. In order to maximize time spent on task, the goal for Blossom is to check in with the college student when they begin to study. Blossom will ask the student if they had a good day. If their day was not good then Blossom will discuss the day and then refocus the student on their schoolwork.
- 3. Blossom has visual data through the students computer to see if the student is looking at the homework or something else. If the student is actively completing a school assignment, Blossom gives positive reinforcement. If the student is looking at something else. Blossom will conduct refocusing exercises with the student so they can finish their assignment in a timely manner.

Objectives & Impact

- 1.OBJECTIVE: The research that is being conducted at USC Interaction Lab will help students all around the world that have ADHD. Blossom, the socially assistive robot will assist the students to complete their assignments in a timely manner.
- 2. IMPACT: The impact in Professor Matarić's lab with Blossom will be advantageous around the world for students with ADHD. So these students can achieve their goals with support in their academics.

Skills Learned

- 1. I learned how to write and distribute a survey in Qualtrics.
- 2. I began to learn about the coding language called C.
- 3. Through trial and error, I was able to mold eyebrows made of InstaMorph (a heat activated moldable plastic). InstaMorph helps create a mock up in what the eyebrows would resemble to a 3D printed eyebrows.
- 4. I had to re-wire the motor for the ears so they would be connected to the eyebrows.
- 5. The eyebrows would be the only thing that moves on Blossom's face, which would portray the emotions.
- 6. I had to code for LED lights to blink in certain patterns. Once the code was perfected. I plugged the computer into the Interactive Arduino board to see if the LED lights would blink in a specific pattern.
- 7. How to splice wires in order to make a male or female ends. When the wires are plugged in correctly then the code I inputted would work. I learned that if the code is not working on the Arduino Board, then I need to check the wires.
- 8. As you can see the eyebrows make a massive difference in conveying different emotions than the old Blossom with out eyebrows. See fig. 1.

Matrix of Blossoms Head and Eyebrow Positions.	"Down"	"Up"	Neutral	N/A
Tilt Side				
Neutral				
Tilt Down				
Tilt Back				

Relates to STEM Coursework

- 1.SHINE has taught me how to be cost efficient while building different prototypes of the eyebrows.
- 2.Therefore, when building our next robot at school, maybe we can discover a different way to build it. If our robotics team is not on the same page, I have learned how to let the conversation flow, and see where it takes us.
- 3. What I discovered was that coding was like learning a new language. I found it interesting to learn new coding software C. I will take this mindset into learning new languages of coding at school.

Next Steps and Advice

- Before SHINE I did not know what my STEM journey consisted of, no goals or expectations. SHINE changed all of that for me.
- 1. I would like to major in an Engineering field with a minor in Creative Writing and Spanish.
 - 2. I also would like to earn my PhD in an Engineering field.
 - 3. I look forward to see how my future unfolds with STEM, Creative Writing and Spanish.

Acknowledgements

My sincerest THANK YOU to Professor Maja Matarić, lab mentor Amy O'Connell, Interaction Lab, Center Mentor Michelle Emelle, and Dr. Katie Mills. It's been a wonderful summer with my lab mates Dru, Ayushi and Tyler. Also to the wonderful and outgoing Blossom. Finally, I would like to thank all the SHINE team at USC for making this summer memorable.

